EPA

Notes from Underground

An update on source water protection and underground pollution control from the United States Environmental Protection Agency (EPA), Region 9, serving Arizona, California, Hawaii, Nevada, Native American Tribes, and the western Pacific Islands.

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"The importance of protecting drinking water supplies has never been greater. The availability of water supplies are challenged by an expanding population, increased demands for habitat protection, and contamination incidents. Therefore every available drop must be protected, which is why the Source Water Assessment Program is so critical."
- Leah G. Walker, California Department of Health Services

"ADEQ is confident that the Source Water Assessment Program and the related source water protection activities will prove instrumental in preserving drinking water safety. Through the flexibility built into the 1996 SDWA amendments, Arizona can have state specific solutions and protection for our drinking water."
- Moncef Tihami, Arizona Department of Environmental Quality

CONGRATULATIONS REGION 9 STATES!

First nationwide to get all state Source Water Assessment Programs endorsed

The U.S. EPA recently gave preliminary endorsement to all four state Source Water Assessment Programs in Region 9 (Arizona, California, Hawaii and Nevada), thanks to diligent efforts by the states' drinking water programs and multiple stakeholders who worked together to meet the February 6, 1999 deadline. Inside is a chart summarizing the components of all four state plans.

The EPA will review and likely approve the programs by November 6, 1999. Program approval begins a 42-month clock, including an optional 18-month extension, at the end of which each State with an approved program must have completed its assessments. Since approval starts the clock, EPA Region 9 is giving its states a preliminary "thumbs-up" to approved programs, reserving final official approval until the last possible day of review.

The 1996 amendments to the Safe Drinking Water Act established the Drinking Water State Revolving Fund, and allowed states to set aside some of their capitalization grant funds to establish Source Water Assessment Programs (SWAPs.) The program seeks to get states to take a look at where their drinking water comes from in order to protect it from future contamination.

All State SWAPs will:
- delineate sensitive areas around wellheads or surface waters;
- inventory potential contaminant sources within the delineated areas;
- analyze susceptibility to those contaminants; and
- communicate findings to the public.

States may use the information collected to provide monitoring waivers to public water systems, meet regulatory requirements such as the Ground Water Rule, and/or to promote the development of local programs to manage and protect water quality.

ARIZONA	CALIFORNIA	HAWAII	NEVADA
DELINEATION METHODS			
Ground Water: Calculated fixed radius of 5 year time of travel (TOT). WHPA model used when more data available. 100' min. radius for non-sensitive aquifers. Surface Water: Rivers/Canals: Segment A - 500' on each side up to state boundary, dam, or end of development; Segment B - remainder of watershed. Reservoirs/Lakes: Segment A - 500' around perimeter and upstream from intake up to state boundary, dam, or end of development Segment B - remainder of watershed.	Ground Water: Calculated fixed radius of 2, 5, 10 year TOT with min.* of: Zone A- 600' Zone B5-1,000' Zone B10-1,500' *fractured settings add 50% Surface Water Zone A-400' around reservoir boundaries & 200' from tributaries, Zone B-2500' from intake	Ground Water: The numerical groundwater flow model, FLOWPATH, will be used to delineate: Zone B - 2 year time of travel (TOT) and Zone C - 10 yr. TOT. Zone A will be a 50' calculated fixed radius. These methods are consistent with the Hawaii WHPP. Surface Water: Delineations include: lakes and reservoirs - 400' buffer; rivers, tributaries, canals, and ditches - 400' buffer. Intakes will have a 2500' buffer. Inventory will be conducted throughout entire watershed.	Ground Water: Calculated fixed radius of 2 yr, 5 yr, and 10 yr TOT. If no info-min. 3000' fixed radius. Approved WHP program Surface Water: Zone A: rivers: 10 miles upstream, 500' buffer zone on both sides. Reservoirs and lakes: 500' around. Zone B: 3000' outside Zone A.
CONTAMINANT INVENTORY			
An adjacent land use (ALU) is any facility or activity where chemicals or contaminants; regulated under the Safe Drinking Water Act and have maximum contaminant levels, regulated under Surface Water Treatment Rule, and microorganism cryptosporidium, are commonly used or present.	All Possible Contaminating Activities (PCAs) associated with the following contaminants will be inventoried: microorganisms; chemicals for which MAXIMUM CONTAMINANT LIMITS or CA drinking water action levels have been established; any chemicals for which monitoring is required; turbidity and total organic carbon.	Contaminants include all regulated and unregulated contaminants under Hawaii laws including turbidity and total organic carbon.	All contaminants with a drinking water maximum contaminant level, MTBE, and perchlorate.
SUSCEPTIBILITY DETERMINATION (INCLUDING RANKING CRITERIA)			
Adjacent Land Uses (ALUs) individually ranked according to permit compliance status, use of best management practices, and history of releases and clean up. Susceptibility = sensitivity (i.e., hydrogeology/well integrity and existing water quality) + vulnerability (i.e., ALU evaluation.) High/Low determination of susceptibility will be made for each drinking water source. Results will be used in waiver program.	Ranking variables: 1) physical barrier effectiveness (PBE) which includes factors such as source integrity, hydrogeology, etc. 2) PCA ranking high/med/low 3) PCA location to source Vulnerability=PBE+PCA ranking + PCA zone location. A point system has been developed to determine the source vulnerability in CA (or susceptibility). Above 8 points, the PCA is considered a possible risk to the well and above 11 points, the PCA is considered a possible risk to the surface water intake. Results will be used to evaluate waivers and to further protection efforts.	Susceptibility: The determination of the likelihood that contaminants from PCAs present in an assessment area will reach and enter the drinking water source. Susceptibility determination takes into account site-specific geologic/hydrogeologic factors, characteristics of the potential contaminating activity, and well construction. The susceptibility analysis scoring will be used to develop a prioritized list of drinking water sources susceptible to contamination , and a prioritized list of PCAs for each drinking water source.	Facility ranking variables: 1) water quality; 2) contaminant risk ranking; 3) distance from well or intake; and 4) susceptibility/sensitivity. The State will make final vulnerability determinations per source for each category of contaminant. Then the state will compose a narrative vulnerability determination for the water system. Public Water System Vulnerability = water quality + contaminant risk ranking + distance from well or intake, susceptibility/sensitivity, and other relevant factors. Waivers considered for ground water sources.
OVERALL RANKING OF PUBLIC WATER SUPPLIES			
A summary of susceptibility will be determined for each Public Water System.	Will provide an overall summary determination of each public water system.	An overall susceptibility score will be calculated for each public water system.	A narrative summary will be provided to each Public Water System.

ARIZONA	CALIFORNIA	HAWAII	NEVADA
PUBLIC PARTICIPATION TO DATE			
5 technical and community advisory committee meetings each; several statewide public workshops and public hearings	Technical and citizen advisory committees each met 5 times. Sub group meetings were held on particular issues. Additional public workshops were held around the state.	Joint Technical and Community Advisory Committee met seven times. Four subcommittees formed. 14 public workshops held on the 6 major islands.	Combined citizens and technical committee. Three meetings in Las Vegas and Carson. Three public workshops.
MAKING ASSESSMENTS AVAILABLE			
SWAP documents will be provided to libraries, health departments, mail notices and maps to customer, public meetings, and posted on our website: www.adeq.state.az.us/water/safe. SWAP purpose, map(s) of Public Water Supply sources, delineated areas, associated ALUs, susceptibility determination per source, and guidance for interpreting results. Public workshops are planned to present assessment results.	Available at DHS district offices and at some Public Water Supply offices. DHS will mail a summary on request. Notice of the availability of the assessment results will be included in the Consumer Confidence Reports. An overall summary for each PWS, ranked list of PCAs, map(s). Maps will indicate either the location of a PCA (no names or addresses) or list types of PCAs within each zone.	Assessments, GIS maps, and summaries will be distributed to public libraries; DOH offices on major islands and the PWS office. Camera-ready copies available at copy services on each island. CD-ROMs, including a GIS browser, provided to public libraries. Distribution will include a map showing sources and assessment areas, general location of PCAs, table summarizing the number of PCAs, general description of the water system, and an overall susceptibility summary.	Notice of availability to be announced through the Internet, water purveyors, libraries, Consumer Confidence Reports, and Wellhead Protection program presentations. A summary of the PWS vulnerability and a map which identifies the type of contaminant sources facilities.
APPROACH			
Assessments will be performed and released to the public throughout the process.	DHS is responsible for all assessments however purveyors are encouraged to conduct their own. Currently require watershed sanitary survey (surface water) to be completed every 5 years.	DOH will conduct all assessments in 2 years with contract support. Demonstration projects will be conducted before full implementation.	State will put together submittal. Assessments will be completed with contractor support. Ground water systems first then surface water systems.
SOURCE WATER ASSESSMENT PROGRAM FUNDING AND SET-ASIDES			
$1.7 million from DWSRF Capitalization grant. Additionally, a set aside for land acquisition and source water protection is being administered by the DWSRF.	$7.5 Million. Capitalization grant provided seed money for Source Water Protection Loan program, beginning in 2000.	$1.199 Million. Additionally, $250,000 was set aside for Well- head Protection, and $200,000 for Source Water Protection, from DWSRF Capitalization Grant.	$1.25 Million. Additionally, $227,618 set aside for UIC; $150,000 for Wellhead Protection; and $201,338 for Source Water Protection.
FOR MORE INFORMATION			
Moncef Tihami, Drinking Water Monitoring and Assessment Unit, Arizona Department of Environmental Quality, (602) 207-4644 http://www.adeq.state.az.us/water/safe/swap.htm	Leah Walker, Division of Drinking Water and Environmental Management, California Department of Health Services, (707) 576-2295 http://www.dhs.ca.gov/ps/ddwem/dwsap/DWSAPindex.htm	William Wong, Drinking Water Program Hawaii Department of Health (808) 586-4258 http://www.aloha.net/~will/hiswap.html	Jon Palm, Drinking Water Program Nevada Bureau of Health Protective Services (775) 687-4754, extension 229

STATE by STATE HIGHLIGHTS... The **Arizona Department of Environmental Quality** will evaluate the contaminant potential of Adjacent Land Uses (ALUs), taking compliance history and the use of Best Management Practices into account when ranking those land uses. Each adjacent land use will be further evaluated based on hydrogeologic factors and proximity to the source.

There are approximately 16,000 active drinking water wells and drinking water intakes in California, and several thousand that are standby and inactive. Funds available for assessment are less than $400 per source. Although **California Department of Health Services** (DHS) is responsible for performing these assessments, some public water systems will perform their own assessments in conformance with the DHS procedures.

For the **Hawaii Department of Health** (HDOH), public involvement is vital to identifying critical issues and appropriate solutions, and providing the foundation for public ownership of resource management efforts. In 1998, HDOH traveled to 6 islands to conduct 14 public meetings, responding to comments from more than 90 participants. For transcripts and Hawaii's SWAP approach, see http://www.aloha.net/~will/hiswap.html. The first phase of assessments will focus on sources located in the areas identified by the Hawaii's Unified Watershed Assessment program.

The **Nevada Bureau of Health Protection Services** started its Vulnerability Assessment Program (VAP) in 1995, allowing public water systems with qualifying ground water sources to obtain monitoring waivers. Under the program, jointly administered by BHPS and the Nevada Division of Environmental Protection, if a groundwater source has low vulnerability to a particular contaminant group, a waiver could be issued, saving public water systems (and their customers) significant monitoring costs. Nevada's Source Water approach will be almost identical, with a risk ranking procedure to be added. Since implementation began, over 45% of all groundwater sources, along with their potential sources of contamination, have been inventoried and located using a Global Positioning System (GPS.) Remaining assessments will begin in early 2000.

Notes From Underground
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